

The used samples

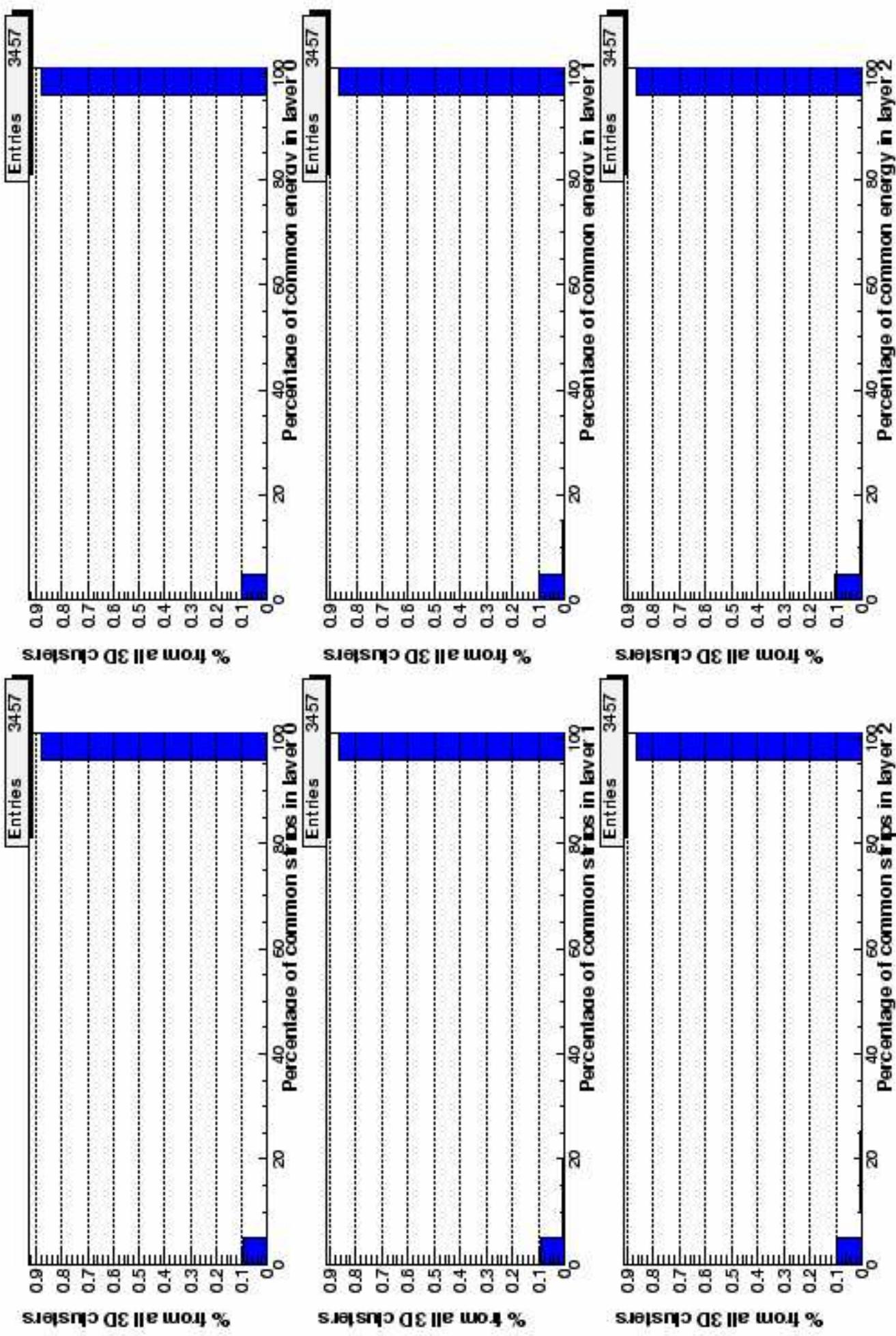
1. Data sample of $Z \rightarrow ee$ events (taken from Yurii Maravin)
2. MC sample of $Z \rightarrow ee$

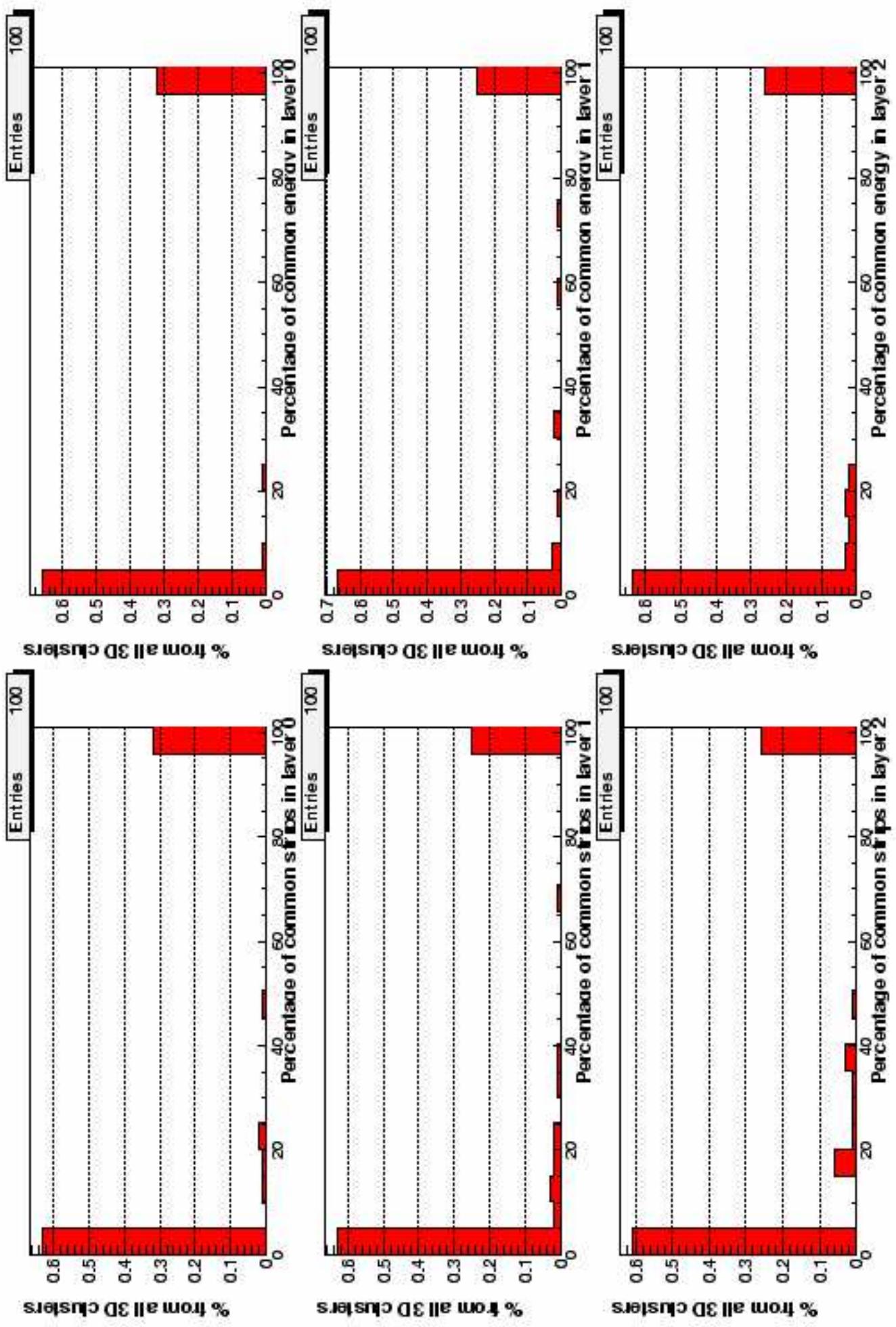
Both samples were reconstructed in p14.06.00.

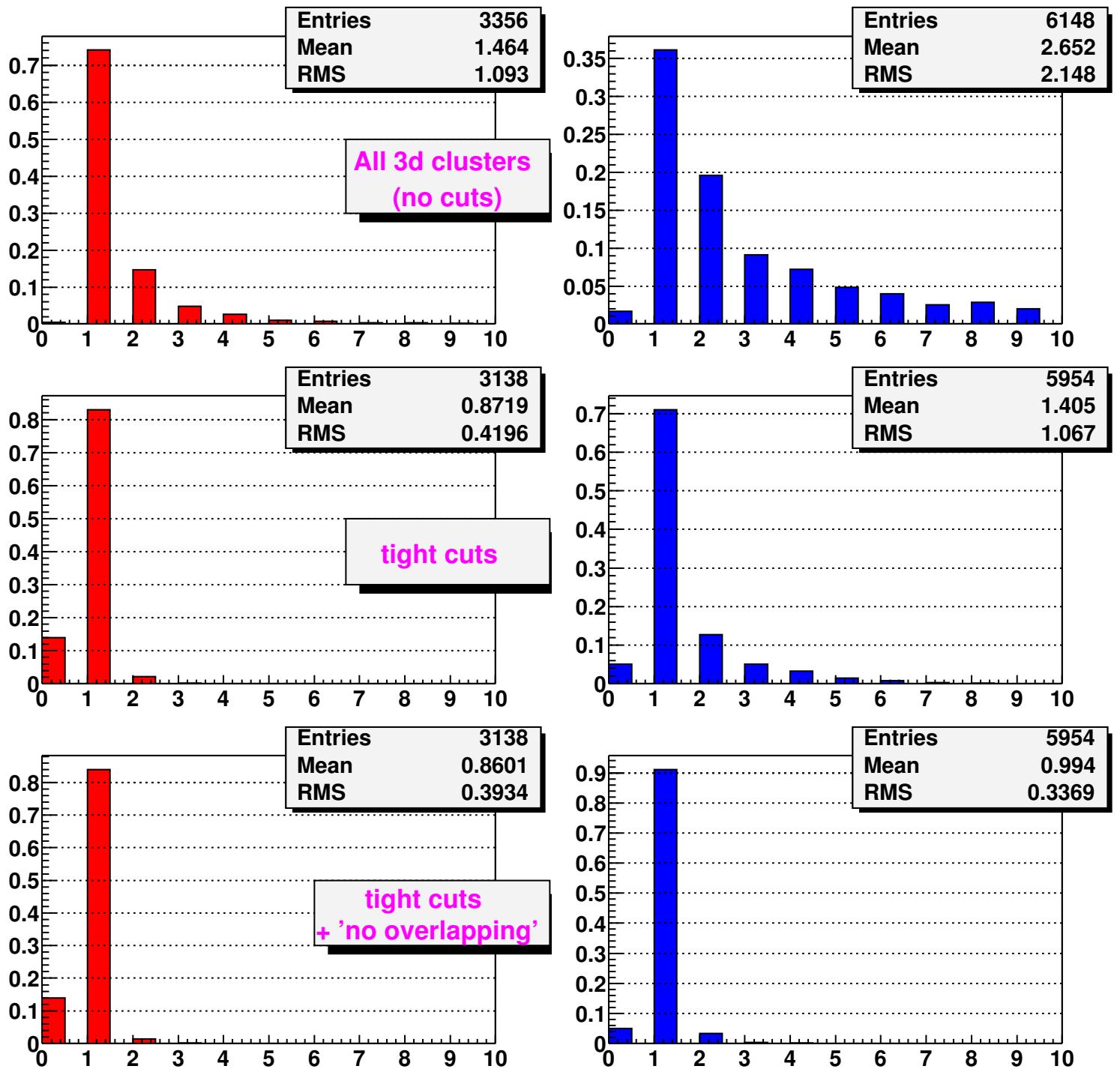
In MC the same RCP parameters in “cps_unpdata/rcp/unp2digi.rcp” and “cps_reco/rcp/CPSReco.rcp” have been used as in data.

The events used in the analysis satisfy the criteria

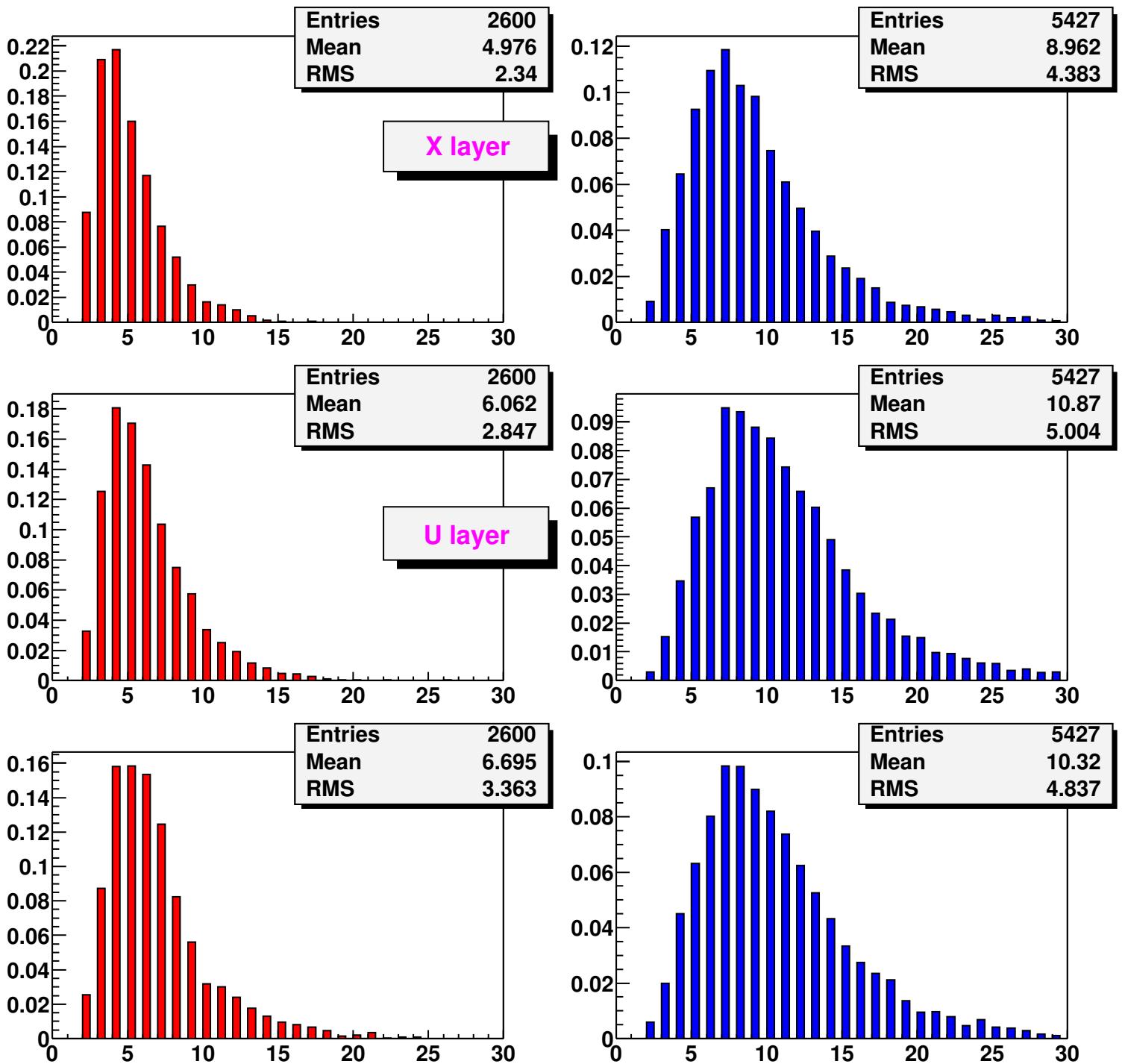
- $pT^e > 20 \text{ GeV}$;
- $|\eta^e| < 1.2$, e^\pm is in in fiducial region;
- $0.95 < \text{EMfrac} < 1.05$;
- $Iso(dR = 0.2) < 0.10$;
- EM object $|ID| = 10, 11$;
- has_track_match();
- $HM8 < 100$;
- $85 < \text{Inv. Mass}(e,e) < 97 \text{ GeV}/c^2$;



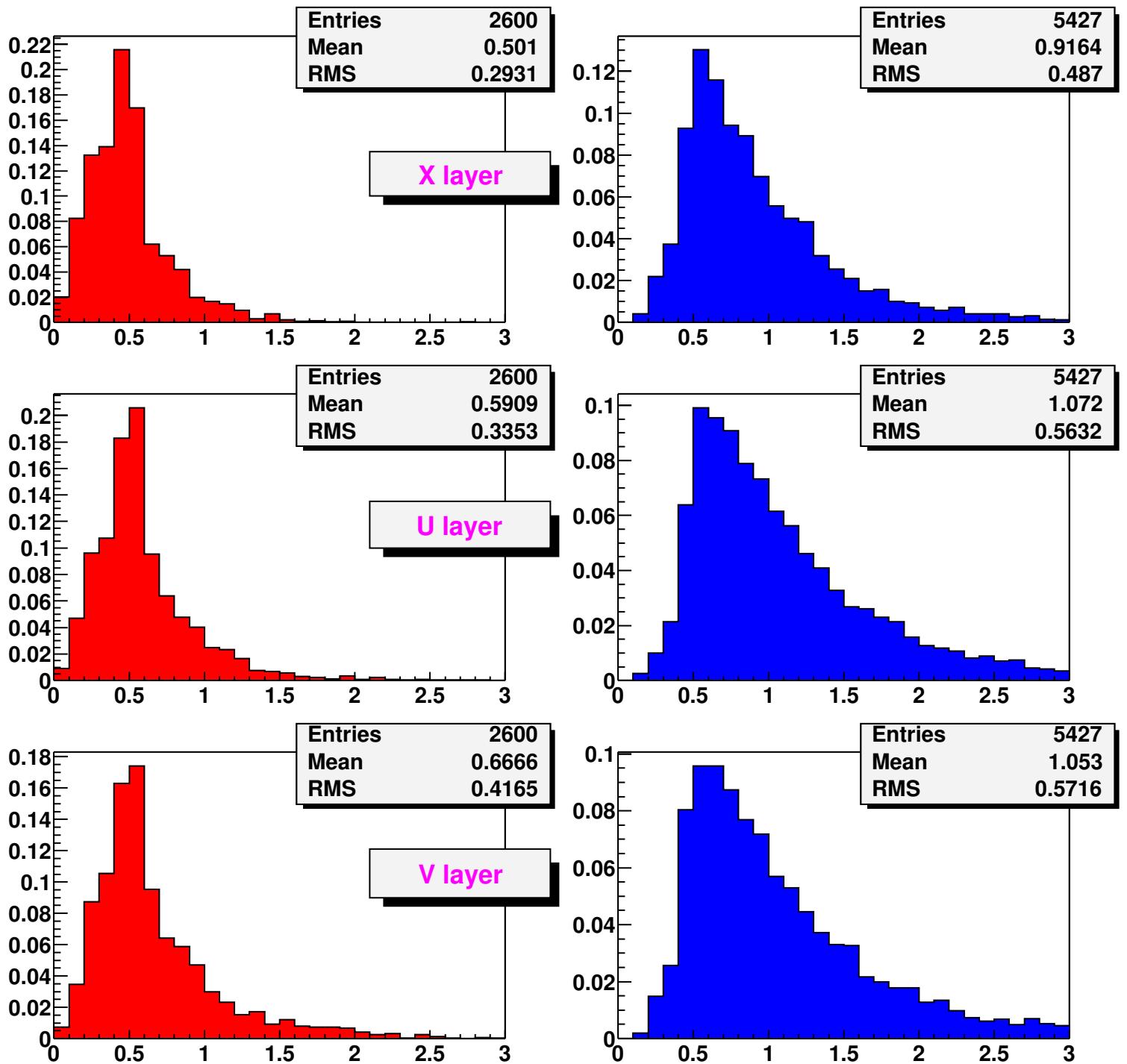




Number of 3d clusters in MC (left) and data (right column) produced by the selected electron (see prev. page)



Number of strips inside the selected 3d clusters in MC (left) and data (right column).



E^2 -weighted SLC widths inside the selected 3d clusters in MC (left) and data (right column).

Concluding remarks

- Removing 3D clusters with overlapped SLC's, combined with application of tight 3D cluster selection criteria ($\text{minEnSLC} > 7 \text{ MeV}$, $\text{minNstrip} \geq 2$, $\text{mQ} > 0.7$, $\text{EmQ} < 1.5$) leads to the spectrum of “the number of 3D clusters” in *data* close to that in *MC*. Electron selection efficiency w.r.t. criterion $N_{3d} \leq 1$ (photon case!) are $\epsilon_{data} = 96\%$ and $\epsilon_{mc} = 98\%$.
- One needs to make a comparison with John Gardner’s method (taking as a reference cluster the most energetic one and the one with minimal mQ and EmQ ?)
- The distributions that reflect internal structure of 3D cluster (as SLC N_{strip} , E-weighted SLC widths) in *data* noticeably differ from those in *MC*.

The distributions shown here were obtained with new geometry version, that include geom./material corrections mostly in the beam-pipe and SMT regions (New geometry is described by Sudeshna in D0 notes 4498 and 4511). The effect on the main CPS variables is very small ($\leq 3\text{-}5\%$).

In search of agreement *data/MC cross-talk parameters* and *number of photoelectrons per MeV* were varied:

FRAC_LEAKAGE: $0.03 \rightarrow 0.10$. **Results:** $\langle N_{strip} \rangle \uparrow \text{by } 5 - 7\%$, $\langle w_E \rangle \uparrow \text{by } 6 - 8\%$, **SLC** $\text{minN}_{strip} \uparrow \text{by } 10\%$

LEAKAGE_THRES: $0.8 \rightarrow 0.08 \text{ MeV}$. **Results:** $\langle N_{strip} \rangle \uparrow \text{by } 5 - 7\%$, $\langle w_E \rangle \uparrow \text{by } 3 - 5\%$, **SLC** $\text{minN}_{strip} \uparrow \text{by } 8\%$

Number of p.e./MeV: $13 \rightarrow 25$. **Results:** $\langle N_{strip} \rangle \uparrow \text{by } 2 - 3\%$, $\langle w_E \rangle \uparrow \text{by } 2 - 3\%$, **SLC** $\text{minN}_{strip} \uparrow \text{by } 6\%$

Conclusion: the observed changes are far from necessary to approach to the *data*. There should be another reason for this disagreement (material, noise, ...?).

A possible solution: usage of different strip E threshold in *data* and *MC* (?)